


P2SC-ROB-WR-380 - 20170703 Weekly report #380	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Jul 03 to Sun Jul 09, 2017 10 Jul 2017  Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

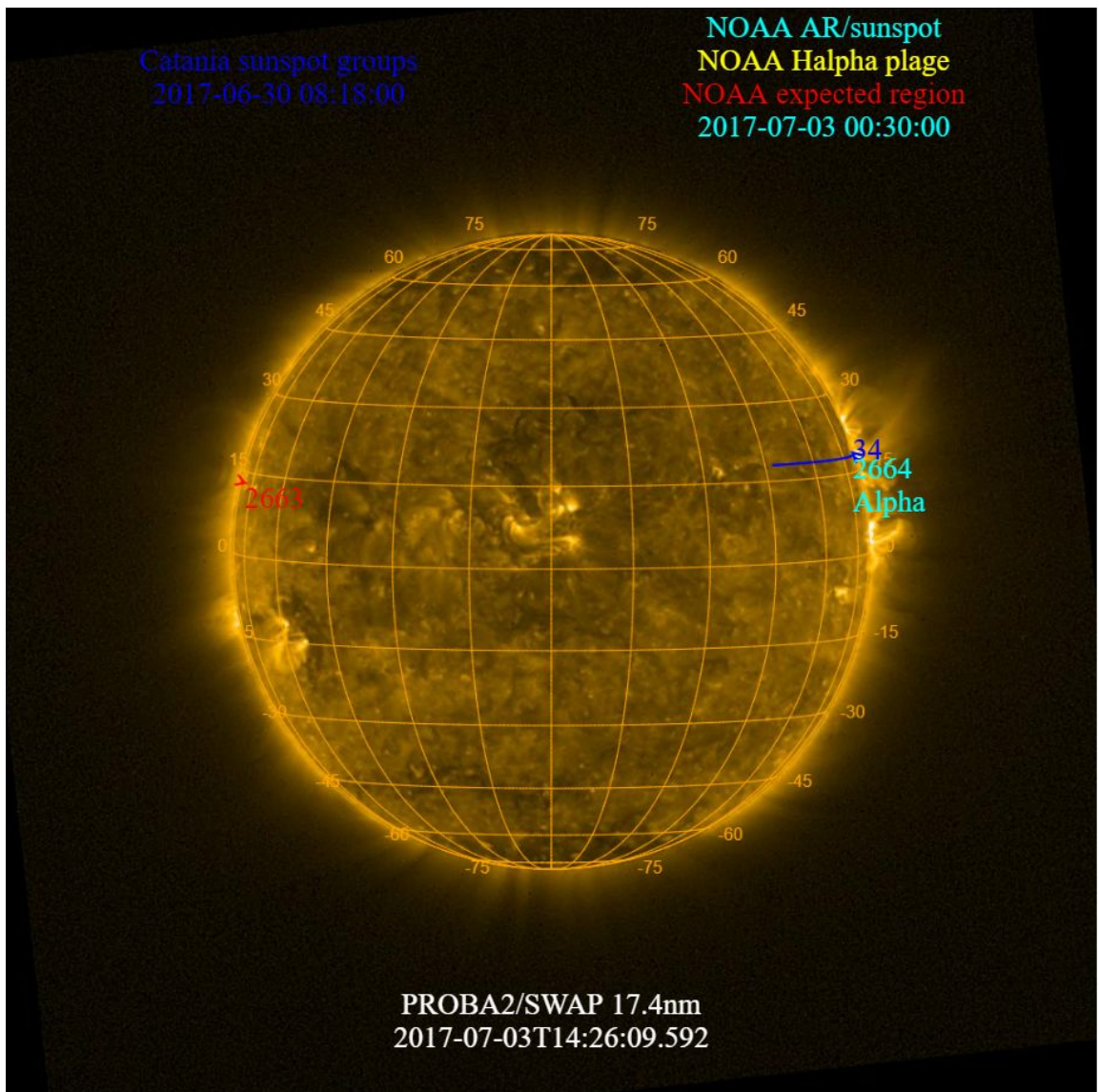
The level of solar activity<sup>1</sup> fluctuated between **very low and moderate** this week.

Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 03 Jul	Tuesday 04 Jul	Wednesday 05 Jul	Thursday 06 Jul	Friday 07 Jul	Saturday 08 Jul	Sunday 09 Jul
Activity	moderate	low	very low	very low	low	low	moderate
Flares	<b>M1.3 @ 16:15</b>	-	-	-	-	-	<b>M1.3 @ 03:18</b>

<sup>1</sup> See appendix. All timings are given in UT.

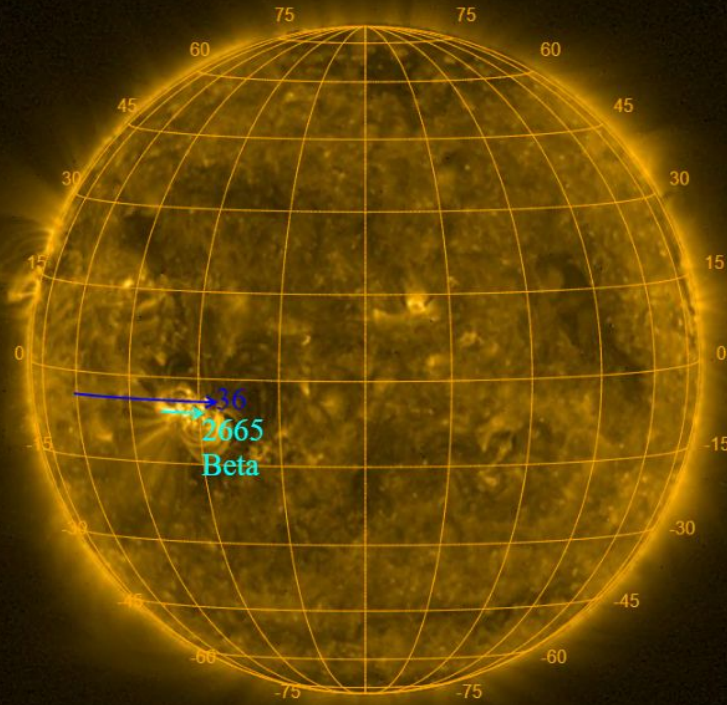
The SWAP images of Jul 03 and Jul 09 are shown below, with annotated active regions.



<http://sidc.be/soteria/soteria.php>

Catania sunspot groups  
2017-07-07 06:30:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2017-07-09 00:30:00



PROBA2/SWAP 17.4nm  
2017-07-09T14:29:18.395

## **Solar Activity**

Solar flare activity fluctuated between very low and moderate during the week.

In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

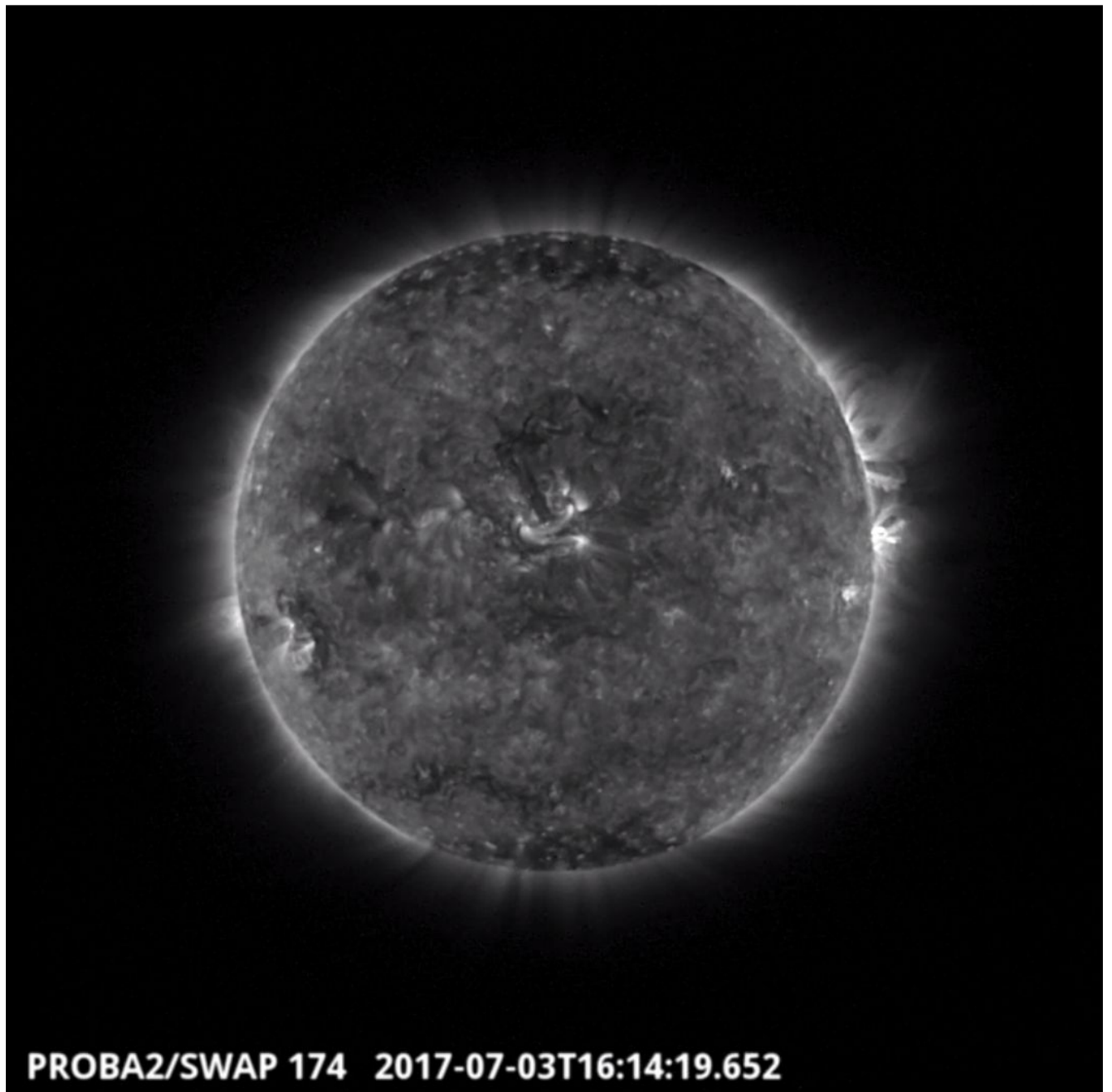
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 380).

Details about some of this week's events, can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

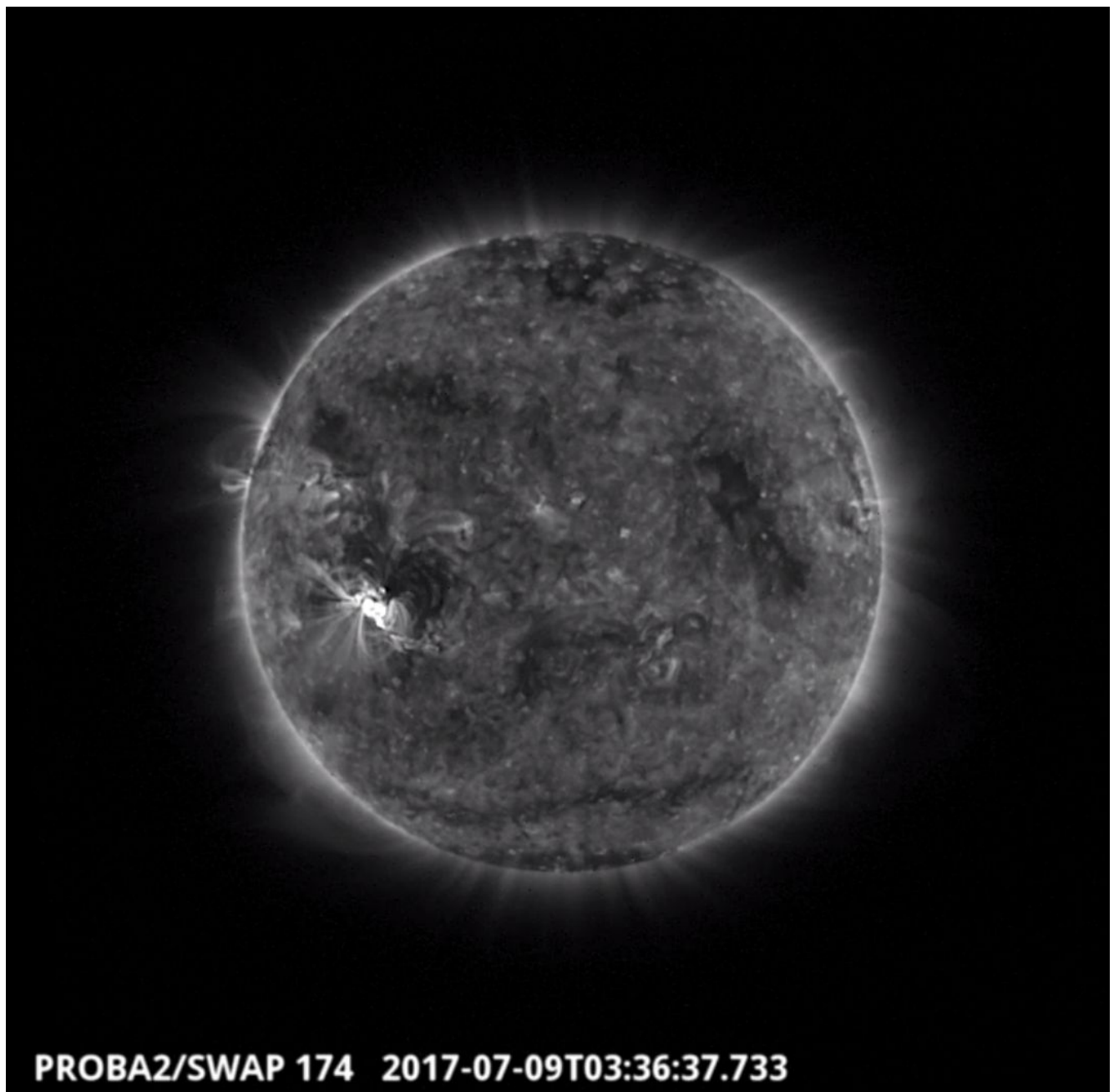
Monday Jul 03



The first M-class flare of the week (M1.3) occurred on 2017-Jul-03. The flare and corresponding eruption can be seen on the western limb of the Sun at 16:14 UT in the SWAP image above.

Find a movie of the event [here](#) (SWAP movie)

Sunday Jul 09



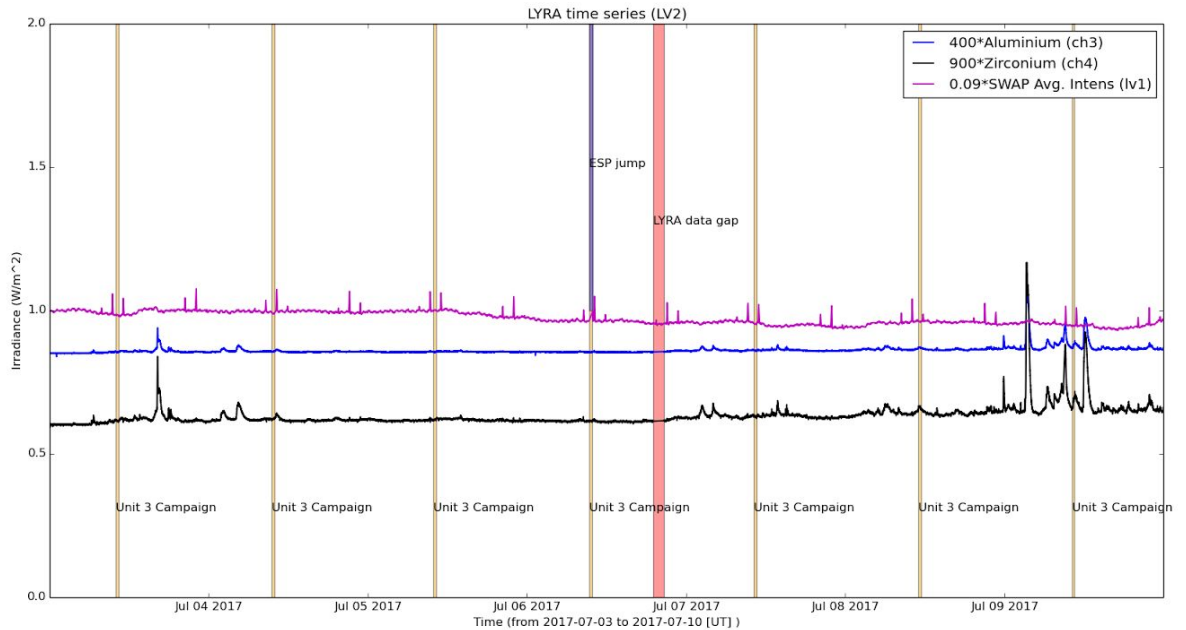
The second M-class flare of the week, also classified as an M1.3, was from NOAA active region 2665 and occurred on 2017-Jul-09 in the south-eastern quadrant of the Sun, as shown in the SWAP image above at 03:36 UT.

Find a movie of the event [here](#) (SWAP movie)

An overview of the weekly LYRA & SWAP data is provided below:

The following curves are visible:

- black: Zirconium Channel LYRA Unit 2
- blue: Aluminium Channel of LYRA Unit 2
- purple: SWAVINT (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)



The blue shaded periods related to SWAP, correspond to, from left to right:

- ESP jump, 2017-Jul-06

The orange shaded periods related to LYRA correspond to, from left to right:

- Daily unit 3 campaign, 2017-Jul-03
- Daily unit 3 campaign, 2017-Jul-04
- Daily unit 3 campaign, 2017-Jul-05
- Daily unit 3 campaign, 2017-Jul-06
- Daily unit 3 campaign, 2017-Jul-07
- Daily unit 3 campaign, 2017-Jul-08
- Daily unit 3 campaign, 2017-Jul-09

The red shaded periods related to other issues corresponds to:

- LYRA data gap, 2017-Jul-06, between 19:03 to 20:42 UT due to very low signal when the data was dumped all LYRA data was lost for the pass 24529.

**Outreach, papers, presentations, etc.**

Please consult <http://proba2.oma.be/science/publications> for a list of interesting articles using SWAP & LYRA data, as well as a link to the complete article list.

The science section of this weekly report is also published in the weekly STCE newsletter (<http://www.stce.be/newsletter/newsletter.php>).

**Guest Investigator Program**

- None



## 2. LYRA instrument status

### Calibration

No calibration this week.

### IOS & operations

Monday 03 Jul	Tuesday 04 Jul	Wednesday 05 Jul	Thursday 06 Jul	Friday 07 Jul	Saturday 08 Jul	Sunday 09 Jul
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00627	LYIOS00627	LYIOS00627	LYIOS00627	LYIOS00628	LYIOS00628	LYIOS00628

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.58 and 48.50 °C.

### 3. SWAP instrument status

#### Calibration

No calibration this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 10551 to 10655.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 03 Jul	Tuesday 04 Jul	Wednesday 05 Jul	Thursday 06 Jul	Friday 07 Jul	Saturday 08 Jul	Sunday 09 Jul
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP Jump	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00708 683 images	IOS00708 749 images	IOS00708 760 images	IOS00708 701 images	IOS00709 711 images	IOS00709 654 images	IOS00709 634 images

Special operations for SWAP, this week:

On 2017-Jul-06:

- ESP Jump

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.29 and -0.25 °C.

#### **4. PROBA2 Science Center Status**

The main operator is Laurence Wauters.

The following changes were made to the P2SC:

- None.

## 5. Data reception & discussions with MOC

### Passes

The delivery of the passes for this week (passes 24493 to 24557) was nominal, except for:

- None.

### Data coverage HK

All HK data files (LYRA\_AD) have been received, except:

- None.

### Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:

- None.

Total number of images between 2017 Jul 03 00:00 UT and 2017 Jul 10 00:00 UT: 4935

Highest cadence in this period: 110 seconds

Average cadence in this period: 122.52 seconds

Number of image gaps larger than 300 seconds: 98

Largest data gap: 31.83 minutes

### Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except:

- 24529, due to a very low signal when the data was dumped all LYRA data was lost for this pass.

## 6. APPENDIX: Frequently used acronyms

ADPMS	Advanced Data and Power Management System
AOCS	Attitude and Orbit Control System
APS	Active Pixel image Sensor
ASIC	Application Specific Integrated Circuit
BBE	Base Band Equipment
CME	Coronal Mass Ejection
COGEX	Cool Gas Generator Experiment
CRC	Cyclic Redundancy Check
DAC	Data Acquisition Controller
DBR	Deployment, backup & recovery
DDA	Decommutated data archive
ESP	Experimental Solar Panel
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HK	Housekeeping
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
LYRA	LYman alpha RAdiometer
LYTMR	LYRA Telemetry Reformatter (software module of P2SC)
LYEDG	LYRA Engineering Data Generator (software module of P2SC)
MCPM	Mass Memory, Compression and Packetisation Module
MOC	Mission Operation Center
NDR	Non Destructive Readout
OBSW	On board Software
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset
SoFAST	Solar Feature Automated Search Tool
SWAP	Sun Watcher using APS detector and image Processing
SWAVINT	SWAP AVerage INTensity
SWBSDG	SWAP Base Science Data Generator
SWEDG	SWAP Engineering Data Generator (software module of P2SC)
SWTMR	SWAP Telemetry Reformatter (software module of P2SC)
TBC	To Be Confirmed
TBD	To Be Defined
TC	Telecommand
UTC	Coordinated Universal Time
UV	Ultraviolet
VFC	Voltage to Frequency Converter

## **7. APPENDIX Solar Activity Definitions**

In the science section we use the following solar activity standards.

The standard scale for solar activity is:

- very low (almost no flares, only B)
- low (a few C flares)
- moderate (many C flares and at least an M flare)
- high (several M flares and an X flare)
- very high (continuous background of C flares, numerous M flares, more than one X flare)